

METHOD FOR THE PRODUCTION OF DEVICES FOR STORING  
ELECTRIC POWER BASED ON RECHARGEABLE  
LITHIUM POLYMER CELLS

Abstract

Storage devices for electric energy preferably consist of Li polymer batteries which are manufactured according to a special process and new concepts and using new components.

Lithium polymer batteries consist of an anode, cathode and polymer electrolyte used as separator, the active masses being degassed and the graphites used for the anode mass being preferably modified by reaction with metal alkyls, e.g. with Li n-butyl.

The process according to the invention is based on the coating and/or extrusion technology, in the case of which all the components required for the electrodes concerned and/or also for the separator are present as spreadable, coatable or extrudable mixtures with solvents, supporting electrolytes, additives and the active components (Li intercalatable carbons and/or Li intercalatable heavy metal oxides) and processed in a continuous, preferably single stage process, the monomers being polymerised and solidified. The mixtures consist of dispersions and/or spreadable pastes which are applied onto the primer-coated conductor at room temperature, e.g. primer-coated Cu foil – coated with the anode mass (15-40  $\mu\text{m}$  thick), the cathode mass then being applied (15-40  $\mu\text{m}$  thick) with the separator and subsequently the cathode conductor (with Dyneon THV/carbon black primer-coated Al foil) being applied. The composite system thus formed is laminated and wound and placed in a housing, poled etc. to form salable, rechargeable Li batteries.

The manufacturing process can also be designed such that double sided coating can take place and/or that parallel anode and/or cathode conductors can be coated and the separator is then integrated into the composite as isolating intermediate layer – as a foil impregnated with supporting electrolyte and solvent or as coating laminate.

An essential advantage of the process also consists of the use of small quantities of vermiculite which expands on lamination under elevated temperatures and thus ensures

additional porous structure conditions with improved migration conditions or “electrical” transport processes.